ROLE OF MATHEMATICS IN STUDY OF ASTROLOGY

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ABSTRACT

Astrology is the study of how the sun, moon, planets, and stars move with the idea that these motions can affect people's lives. From ancient times our ancestors have been using mathematics for birth ascendants and horoscopes. They used to prepare birth charts with the help of mathematical calculation. The relation between mathematics and horoscopes is well explained. The purpose of this research paper is to tell the relation between the various topics of mathematics with astrology.

KEYWORDS: Mathematics, Horoscope, Astrology

1. INTRODUCTION

One of the most prosperous persons on the planet would be a spiritual person who excels at arithmetic. Astrology and mathematics have a lot in common. Numerology and astrology are two domains in which mathematics is extensively employed as a science of calculations. The world's finest men were practitioners and believers in astrology. It is "the highest, noblest & without defect," according to Dante. Democrats, Kepler, Bacon, and Pythagoras were all experts in astrology. Newton was drawn to the study of astronomy and mathematics after reflecting on an astrological figure in the sky. Maths is, of course, employed in astrology to determine a natal chart's position for the planets and House cusps.

In the horoscope, the planets can be in different combinations, resulting in many permutations and combinations [1]. Considering the planets' degrees, one can see in the horoscope whether two planets are in conjunction, expecting, or none at all, as well as if they are in an exalted, debilitated, or retrograde state. Mathematics is useful in that situation. Astrology is not a single combination. People will tell you about Mercury, Jupiter, or occasionally even Rahu and Ketu if you question them about these planets [2]. Nevertheless, as these are again generic laws, their statements are ultimately only partially accurate. and not much suitable for everyone. The formulation of the idea of mathematics can be found in the sutras. These sutras are relevant for astrological applications, such as calculating positions in terms of angles using Pythagoras' theorem. It is also revealed that astrologers use the equatorial rectangle coordinate system to define position in space. This aids in planetary position computation. Astrology and mathematics are inextricably linked [1].

Even, Galileo who was an Italian astronomer, philosopher, and mathematician explained the relation of God and universe. He devised fundamental contributions in astronomy, and the development of the scientific method. Also famous Indian mathematician Srinivasa Ramanujan, who is known for his amazing achievements in the field of mathematics expressed the thought of GOD.
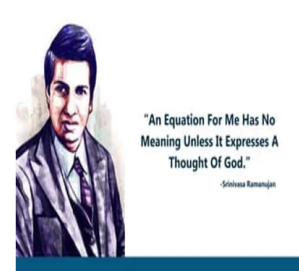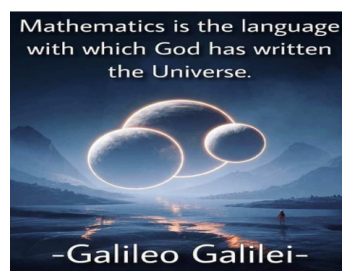
In this paper, the relation of various topics of mathematics as well as vedic mathematics are with astronomy are explained with suitable examples.

2. RELATION OF CORRELATION AND ASTROLOGY:

The correlation is a mathematical or, more accurately, statistical concept to determine the strength of the planets in the horoscope.

In order to gain a deeper understanding of astrology through a mathematical lens, we must first acknowledge the significance of the three knowledge instruments—instincts, reason, and inspiration. Definition of the physical world is the experience of mathematics; definition of the spiritual world is the experience of spirituality. The universe of mathematics is limitless. even the number system never ends [4].

The spiritual realm is boundless. Spiritual concepts cannot be measured by mathematics. One cannot express the size of the soul, the extent of God, or the depth of one's experience. And mathematics cannot be limited by spirituality. Spirituality lacks the ability to differentiate between variations, quantify the physical world, and describe it [6]. It can only define and know what mathematics is unable to do. What is infinite, unbounded, or greater than any natural number is called infinity. ∞ is a common symbol used to represent it. The concept of infinite remained linked to never-ending procedures. The perpetual reflection of light between the opposing mirrors gives the

impression that the space and repetition inside them are infinite.

Astrology is a mathematical object that may be studied, changed, and utilized in the same way as any other. The universe is spatially boundless, as established by mathematics and astronomy by the contemplation of an astrological figure of the skies, according to physics and cosmology. The ability to work backwards in intelligence is the most crucial requirement. You cannot expect to know and study the rules for everything in the world since it is so vast [3]. Astrology is about the total influence rather than the result of a particular combination [4]. Because it would greatly improve your talents. Mathematics play vital role to enhance your skills in life. Life would be easier if you were strong at numbers otherwise one must have to depend on software. Mathematics is primarily useful for research and creating your own prediction methodology. As you gain experience and have studied astrology extensively, you will eventually be able to create your own system for interpreting horoscopes.

Horoscopes could also be understood mathematically by using the ideas of regression and correlation [3]. A pair of variables X and Y are considered correlated when their relationship is such that any change in one results in a corresponding change in the other, or when a rise in one is accompanied by a corresponding reduction in the other. Based on the coefficient of correlation (ρ), which falls between -1 & +1, the horoscopes could be more accurately analysed, and the ρ could be computed using the mathematical formula [9]. When the value of ρ is -1, we have a negative perfect correlation, meaning that two planets have an antagonistic effect on one another. Two planets have a positive influence on one another and are great friends if the value is +1, which indicates a situation of positive perfect correlation. The computed ρ value will indicate how strongly the value is negatively correlated if it falls between -1 and 0. The computed value of ρ will determine how much of a positive impact there is if the value falls between 0 and +1. The value should be zero, when two planets are uncorrelated, they only affect one another when they are not in conjunction or aspect. This will be the case with the horoscope's lagna chart, but not with the rashi chart. However, this is rarely the case in real life because the rashi chart will often produce scenarios where all planets are periodically impacting one another [7]. The idea of correlation can be applied multiple times, using various permutations and combinations of planets positioned or expecting the same house, if more than two planets are placed in conjunction with or expecting a specific house.

3. VEDIC MATHEMATICS & ASTROLOGY:
The sixteen fundamental sutras, or aphorisms, that make up the Vedic mathematical system are taken from the Vedas. Early in the 20th century, Bharati Krishna Tirthaji Maharaja, a Hindu scholar and mathematician, presented them [8]. Vedic Mathematics' multiple-choice format makes mathematics an interesting subject. Because Vedic Mathematics makes systematic use of both sides of the brain, there is a greater likelihood that the intuitive side of the personality will develop. At a very subtle level, the Vedic Mathematics system aids in the growth of our spiritual selves. The study of the Vedas reveals

a close relationship between vedic astrology and mathematics. It has been determined by examining the contributions made by Aryabhata, Brahmagupta, and Varahamihira in the fields of astrology and Vedic mathematics. At a very subtle level, the Vedic Mathematics system aids in the growth of our spiritual selves. The fundamental ideas of vedic mathematics, such as improving personality intuition, employing a multiple-choice format, and developing personality spirituality, also aid in making astrology an interesting study.

4. GEOMETRY & TRIGONOMETRY IN ASTROLOGY:
Astrology is essentially the science of interpreting start values, positioning values, transitional values, and so forth based on the earth's rotation. Since astrology works with projective geometry, the separations between celestial bodies are meaningless. What matters are only their relative positions on the celestial sphere [10]. Stated otherwise, the only factors that count when determining the relationship between thing are, the angular differences from Earth, cosines, coefficients, distance algorithms and the relative age effect. The data scientists associated with this are astrologers.

The zodiac can be compared to a sentiment analysis, as it attempted to classify a large quantity of unstructured data into discrete groups according to their distances or elapsed periods, employing a numerical value of 1, 0, -1, as reported by individuals moving in relation to it. Astrology's basic idea is measurement, which is invariably grounded in numerical data. The astrological energies depicted in any birth chart can be precisely measured on the bases of numbers. The birth chart is demonstration of mathematical model of the human character and reliable conclusions based on the data are drawn with the help of the numbers. These numerical representations of human nature come from mathematical measures. When examining the birth chart, which is a mathematical depiction of a person's personality, numbers enable us to make valid inferences from the information. They contribute to the revolution in parameter evaluation and situational forecasting.

It is also known that each planet has a relationship to the fundamental mathematical concepts such as directions, degrees, distances and so on. These concepts are expressed in the form of sutras. These Sutras have significance in astrological applications such as Pythagoras theorem is applicable to calculate the positions in terms of angle [10]. The equatorial rectangle coordinate system is also used by astrologers to express the position in space which is beneficial in calculation of planetary positions. This relationship aids in our analysis of the positions, effects, and strengths of the planets in a person's birth chart.

4.1 Midday and midnight: The Seers have advised that if the birth time is recorded in LMT (Local Mean Time), it needs to be changed to LAT (Local Apparent Time), even though midday is defined as the LMN (Local Mean Noon). time) by using the time equation [6]. When the sun is in the location's lower Meridian, it is considered midnight, and this is measured as 12 o'clock.

4.2 Equation for Diva Ratri Bala: A day has 360 degrees, and there are 180 degrees between noon and the next midday and vice versa. Using the equation of time, LMT is to be transformed to LAT. Also, the following formula is used to convert birth time measured from midnight to degrees at a rate of 15 degrees per hour (Ardha Rasi Bhavesh Hora): if the birthtime in degrees is greater than 180, then deduct it from 360.

Diva Bala for Venus, Jupiter, and Sun = degrees of birth divided by 3.

Ratri Bala for Mars, Saturn, and Moon =180 - birth time in degrees divided by 3.

Fortnight Strength is explained as Paksha Bala in Shastiamsas. A Paksha is a fortnight, or fifteen days, and a Paksha is equal to fifteen lunar days. Shukla Paksha, or the bright half of the lunar month, occurs when the Moon waxes, while Krishna Paksha, or the dark half of the lunar month, occurs when Moon wanes.

4.3 Case study of Twins: It's not unusual (particularly when twins are born mere minutes apart) that their personalities will be same. Two people can become even more alike if their birth charts are similar.

5. CALCULUS, STATISTICS, AND ASTROLOGY:
The calculus and statistics are two branches of mathematics specifically used astrological concepts especially those related to data collection, analysis, and conclusions have a mathematical basis [5].

The concept of limits in calculus explains how and when twins are born, sometimes having the same fortune and other times having different fortunes in some aspects or frequently looking alike. This helps to explain the twin case study.

The results are said to be fairly close or value approaching is explained by the mathematical idea of limits. Mathematical concepts such as dependent and independent variables, infinite values, and indeterminant forms all contribute to the logical and intelligible nature of astrology [3].

When an undefined expression involving an operation between two quantities does not evaluate to a single number value or infinity, it is referred to as an indeterminate form. Also, when an undefined expression involving an operation between two quantities evaluates to a single number value or infinity, it is referred to as a determinate form. The instance of the twins is easily understood if one is familiar with the idea of indeterminant forms. One may also note how beautifully these two parallel analogies resemble each other and draw the conclusion that mathematics seeks to create an unfailing basis before creating a system of truth.

6. SAMPLING AND PROBABILITY IN ASTROLOGICAL PREDICTIONS:
The concepts of probability and sampling in statistics are branches of mathematics which are helpful in judging the accuracy of predictions.

The possibility that an event will take place is referred to as its probability. In another way, the study of chance in relation to event occurrence is probability [11].

An event's probability can be stated as a number between 0 and 1 or as a percentage between 0% and 100%. It is difficult to come up with any real-world instances that are relevant to statistics where the probability is either 0 or 1. Even less than one percent can predicts that the Sun will rise tomorrow.

The idea that an experiment carried out under nearly exacting conditions does not produce the same outcome is explained by probability.

Additionally, a mathematical lens based on sampling could provide a clear understanding of the case study explaining why forecasts aren't always extremely accurate. Probability theory serves as the cornerstone of inferential statistics, which has been very successful in influencing perceptions regarding the conclusions to be made from data. When analysing predictions based on a larger set of data (large sample tests, sampling), we discuss predictions with a 5% level of risk, where the result value falls into the region of rejection or the critical region, or within the 95% confidence interval, but not with 100% certainty [11]. Forecasts that rely on population samples are vulnerable to sampling error, which captures the impacts of randomness and unpredictability in the process of sampling. In order to estimate the opinions of the entire population based only on a subset, sampling polls use the law of large numbers. The absolute size of the sample is crucial for this purpose, but the proportion of the population as a whole is not (unless it happens to be near to the sample size). The margin of error, which is typically defined as the radius of a 95% confidence interval for a given statistic, is a common way to indicate the potential difference between the sample and the entire population. When a survey reports a single, global margin of error, it means that all reported percentages utilizing the whole survey sample have the highest margin of error [11]. A bigger sample can help to lower the margin of error; however, a sample of about 10,000 respondents would be required to cut the margin of error to 1%. Sometimes the birth data are not fully and accurately known, or they are not supplied accurately, and as a result, the entire calculation, analysis, and inference process proceeds incorrectly assigning fault to astrologers or astrology. However, if a complete scientific analysis is conducted and a correct horoscope is available, the forecast accuracy ranges from 95% to 100%.

7. CONCLUSION:
In conclusion, all that would be required is brains and reason. Of course, dedication is necessary, but it is often overlooked since it is the foundation for all learning. One should be reasonable and logical with the help of mathematical concepts. One can learn most when you approach things with uncertainty. In prediction of astronomy, the main mathematical concepts used are correlation, geometry, trigonometry, vedic mathematics, calculus, statistics and probability. At the end, forecasting is not possible without knowledge of mathematics. One can understand astronomy in a better way when the knowledge of

main topics of mathematics is gained and study of astrology is incomplete without mathematics.

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